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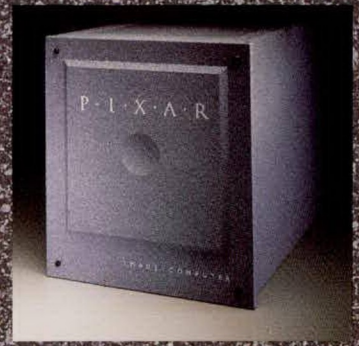
THE PIXAR IMAGE COMPUTER



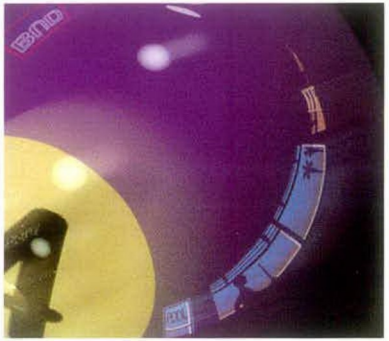
PIXAR BRINGS NEW POWER TO YOUR APPLICATIONS.

Unlike a dedicated image processor, the Pixar Image Computer is programmable to suit any image processing requirement. The Pixar Development System™ consists of a user workstation (shown below), disk drive, software libraries and a host computer. The host handles I/O in its own programming environment, replete with Pixar tools for manipulation, filtering, compositing and more.

Pixar provides a graphics toolkit for manipulating images such as "1984," shown on the screen and magnified. Software is provided at three levels: host programs, host subroutines and subroutines for the Chap channel processor.

The system also includes software for generating images like the unicycle. The smooth seams and object complexity demonstrate its superb rendering capabilities.

Consider what you could do with this power. These images show a sampling of some applications brought to life by the Pixar Image Computer.



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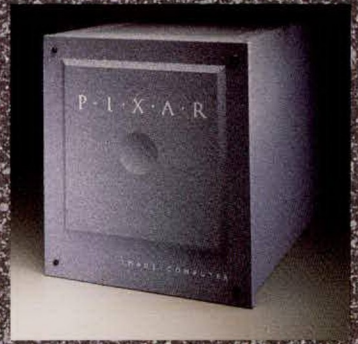

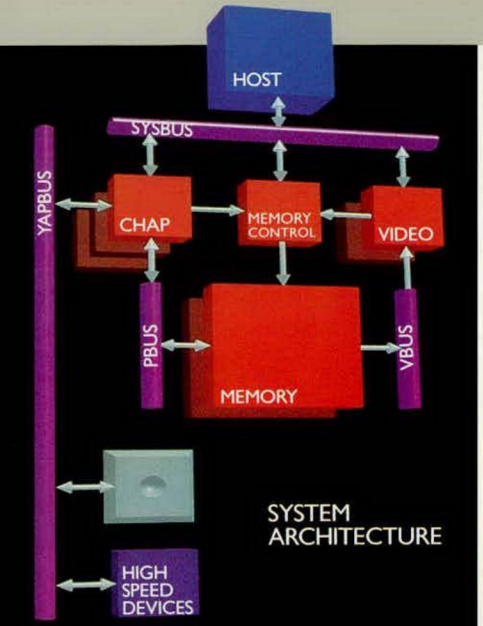

SYSTEM ARCHITECTURE

The Pixar Image Computer™ is a pixel-based, programmable device for generating and manipulating large digital images. It processes high-resolution picture data—either color or black and white—at 40 million instructions per second. Its four parallel processors, integrated with a large high-resolution memory, allow you to go far beyond the limits imposed by conventional image processing devices.

The standard Pixar™ computer has a 24-megabyte picture memory. Its four 12-bit memory channels can store 16 million monochrome pixels, or 4 million full-color pixels containing RGB and Alpha channels. The Alpha channel allows each pixel to carry extra information for matting, overlays and anti-aliasing.

The Chap™ channel processor accesses memory data through the Processor access bus (Pbus) at 240 megabytes/second. This extremely high bandwidth eliminates the I/O bottleneck inherent in most systems.

The Yapbus™ operates as a local communications network to external devices or other Pixar computers at 80 megabytes/second.

The system can be expanded to 48 megabytes of picture memory, three Chaps and two video boards, which provide two independent views of memory.

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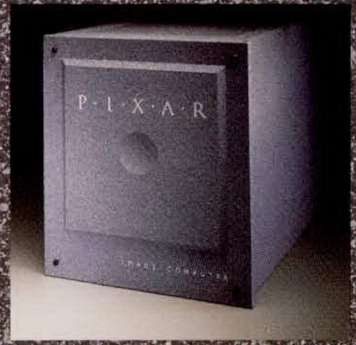
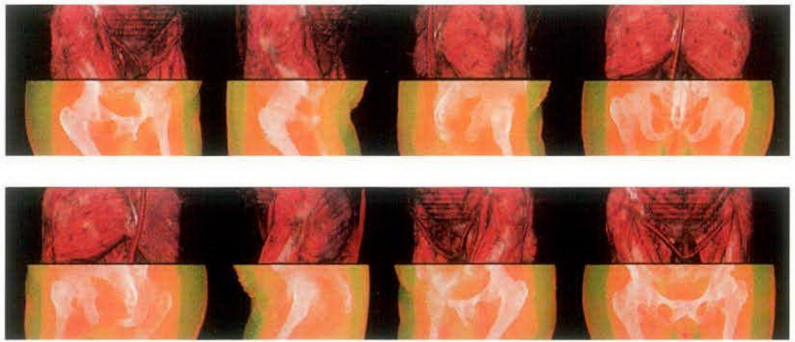


MEDICAL IMAGING.

The resolution and processing power of the Pixar computer allow physicians to move from film-based interpretations to interactive digital diagnosis. The interactive enhancements made possible by the Chap are unobtainable with film and impractical on standard computers. The high data throughput of the Pixar computer makes it ideal for PACS network environments.

Potential uses go far beyond conventional 2-D analysis. The Pixar computer formed the images below using 48 monochromatic CT scans of a woman's pelvis. The slices were assembled into a volume, classified using smooth color and transparency, then the volume was realistically rendered.



GEOPHYSICAL ANALYSIS.

Large volumes of information can be processed and displayed interactively. Memory can be configured to suit either 2-D or 3-D needs without sacrificing performance.

The image below is a 3-D view of a seismic volume generated by an interactive volume-display program. Because the memory of the Pixar system holds the entire volume, the user can roam through it interactively in real time.

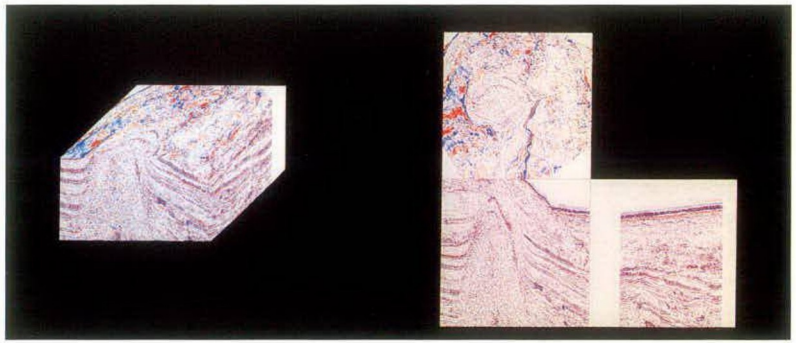
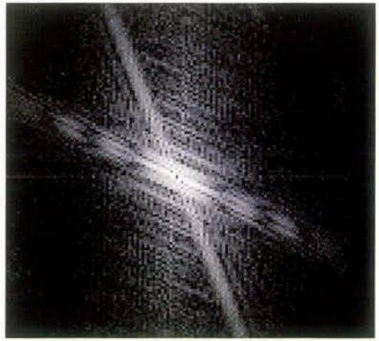


IMAGE INTERPRETATION.

The picture memory can hold this entire 4 million pixel image of the San Francisco Bay Area. The software magnification routine, one of the standard library modules, makes it easy to examine the image in detail. This routine uses a sophisticated interpolation technique to magnify without introducing artifacts.

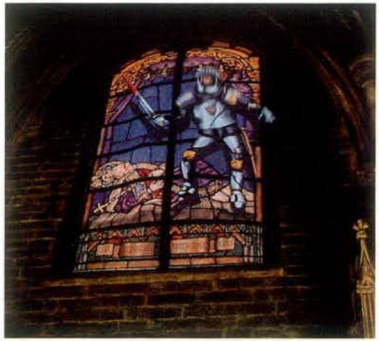
Because of the Pixar computer's speed and programmability, no special hardware was needed to generate the discrete Fourier Transform shown below. The routine used generates a frequency-space representation of a 128×128 pixel area every 30th of a second, providing a real-time software FFT.



GRAPHIC ARTS. AND MORE.

High resolution, both in color and detail, allows the composition of images from many sources with no loss of fidelity. To produce these frames from the movie "Young Sherlock Holmes," three elements were combined. The stained glass image was painted at the Pixar computer. The church background was pre-filmed. The animated knight was superimposed.

These are only a few examples of the avenues waiting to be explored with the Pixar Image Computer. Its processing power allows people to see and utilize data in ways never practical before. With it, our customers are already creating new uses for high-resolution digital images in science, medicine, industry and the arts. And more. Much more.



SPECIFICATIONS

CHAP™ CHANNEL PROCESSOR	
Processors per Chap:	4
Chaps per system:	1–3
Data word width per processor:	16 bits
Clock cycle time:	<100 ns
Instruction duration:	1-4 clock cycles
Instruction memory:	16K words (96 bit words)
Scratchpad memory:	16K x 16-bit words x 4 (64K words total)
Memory bus bandwidth:	240 Mbytes/second
Yapbus bandwidth:	80 Mbytes/second
PICTURE MEMORY	
Organization:	Linear address space tesselated for access in X, Y or block; dual ported
Size:	4M pixels (48 bits/pixel) or 8M pixels
Bandwidth:	480 Mbytes/second
DISPLAY SYSTEM	
High-resolution standard:	1024 x 768 interlaced
High-quality broadcast standard:	NTSC (525 line RGB) external sync.
Video boards per system:	1 or 2
Color lookup tables:	3,10 bits in, 10 bits out
Bits per DAC:	10
Video bandwidth:	480 Mbytes/sec.
PHYSICAL CHARACTERISTICS	
Size:	21" x 19" x 30", rack mounted
Weight:	100-150 lbs. (45-68 Kg)
Operating range:	0-50° C
Humidity:	5-95% non-condensing
Power:	3kVA (worst case) @ 208-240 VAC single phase
Safety:	UL listed
RFI:	FCC Class A
CURRENT HOST INTERFACES:	Multibus, VME bus

PIXAR OFFERS MORE THAN HARDWARE AND SOFTWARE

The advent of the Pixar Image Computer leads the way to new applications in digital imaging. We apply the same high standards to manufacturing as we have applied to research and development over the past five years. From site installation to training classes and technical support, we are committed to working with our customers as partners in the development of their own products.

Pixar—the company and its product—are providing the foundation for a new generation of imaging systems. When it comes to image computing, the place to come is Pixar.

For more information, contact:
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